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AUTOMATION AND YOUTH

Forecasts by: Walter Reuther
Ewan Clague
Jerome Rosow
and others

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NATIONAL COMMITTEE ON
EMPLOYMENT OF YOUTH
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EDITORIAL NOTE

Everyone who loves a child wants him to grow up to be happy, useful, and fulfilled. Those who want to help him must be concerned about what rapid technological development will do to his environment, his education, and his opportunities for self-realization.

To help you anticipate the problems, The American Child *asked the U.S. Commissioner of Labor Statistics, a representative of a major corporation, a leading labor union official, an agricultural expert, a vocational counselor, and an educator to try to forecast the effects of automation on America's youth. Although you will find many differences of opinion (even outright contradictions), you will be impressed with the unanimous conviction of our contributors on one point.*

The future is going to be very grim for people who don't have adequate or appropriate education and training. The new jobs opened up by automation will not be jobs for unskilled, untrained dropouts. Almost every job will demand more education and training. Higher skill levels will be expected of white collar workers, craftsmen, and foremen as well as scientists, technicians, engineers, and professionals.

To help a child succeed, you will want to make sure he has the skills and training he will need. Some contributors make provocative recommendations for our whole society. Their conclusions make it clear that, whatever else is done, it will be increasingly vital for us to stimulate more opportunities for young people and to prepare them adequately for adult life — the program of the National Committee on Employment of Youth.

The Editors

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AUTOMATION AND YOUTH IN THE 1960'S

By EWAN CLAGUE

U.S. Commissioner of Labor Statistics

So much has been written about automation and automatic worker-less offices and factories of the future that many of our young people may come to believe that the world of work they will enter in the decade ahead will indeed be a bleak and barren place with few employment opportunities. To offset the misconceptions that may have been developed, those of us concerned with the welfare of our nation's youth must provide them with more realistic information so that they can see the future world of work in proper perspective.

The catchword "automation" is often used to describe technological advances, such as transfer machines for moving material automatically through processing stages, electronic computers for handling large amounts of data, and feedback controls for the self-regulation of manufacturing processes through electronic devices. Students of our economy have suggested that automation is not one thing, nor is it something brand new, but rather a combination of new emphases and developments in modern technology. The important point to note about technological innovations since World War II is not that any special term describes them but instead that they have been widespread — affecting both industry and agriculture.

It seems to me that our special task is to let young people know that the current and future technological changes expected to occur during the 1960-70 decade will affect and change the occupational pattern of our labor force. We must also convey the knowledge that high levels of employment will accompany the expected technological progress, if the next ten years resemble the record of the past. Our task is to let young people know that, for the most part, the challenge they face in the decade ahead will be how to prepare best for an expanding economy that will need more and better trained workers.

Manpower: Challenge of the 1960's, a bulletin recently issued by the Department of Labor, indicates that by 1970 we will

be able to provide our expanding population with a twenty-five per cent increase in its standard of living. It is particularly significant to those of us concerned with the welfare of youth that especially rapid population growth will occur among youth reaching working age. Total population in the U.S. is expected to rise from 180 to 208 million in the next ten years. The number of young people reaching eighteen each year and ready to enter the labor force or go on to college will increase from 2.6 million in 1960 to 3.8 million in 1970, a gain of fifty per cent in the decade. Altogether, twenty-six million new young workers will enter the labor force during the 1960's — almost forty per cent more than during the 1950's. Workers under twenty-five will account for nearly half of the labor force growth during the next ten years.

Major changes will take place in the industrial makeup of our economy, in the composition of the labor force, and in the kind of jobs the economy will require along with a large increase expected in the labor force between 1960 and 1970. As our technology will advance, proportionately fewer workers will be required to produce goods. More workers will be needed to provide increasing services as our standard of living goes up.

The kinds of jobs in industry will change also. The biggest increases will occur in occupations requiring higher levels of education and training. In 1956, employment in white collar occupations (professional, managerial, clerical, and sales) surpassed blue collar employment (craftsmen, operatives, and laborers) for the first time in our history. This represented a fundamental change in employment patterns. This shift toward white collar employment is expected to continue in the next decade.

The fastest growth will occur, during the coming decade, among professional and technical occupations, especially engineers, scientists, and technicians. Engineering, which has been one of the fastest growing occupations in recent decades, is expected to continue its rapid expansion. The number of scientists will also increase rapidly in the 1960-70 decade. Mathematics and physics will be among the fastest growing of all professions, although employment will probably not increase as fast as in engineering and some of the other sciences. It is estimated that technician occupations such as those of draftsmen, engineering aides, and laboratory assistants will increase as fast as those in engineering and the sciences.

Among the blue collar workers, the number of skilled craftsmen will increase faster than the semi-skilled and industrial laborer groups. By the end of 1960-70 decade, employment of skilled workers is expected to reach nearly eleven million as a result of such factors as the prospective growth in industry and its increasing need for skilled workers resulting from technological advances. As in the past, however, there will be differences in the rate of employment growth for workers in many skilled occupations. For example, as mechanical equipment becomes even more widely used, the very large mechanics and repairmen group of occupations should continue to grow at a rate faster than that for the skilled work force as a whole. There will be many thousands of job opportunities for auto mechanics, industrial machinery repairmen, and maintenance electricians. Similarly, the skilled building trades are expected to show a more rapid employment growth, principally as a result of the anticipated large rise in construction activity.

In the next ten years, young people equipped only to fill low level jobs will probably have even lower opportunities than today, owing to the same technological, economic, and social factors that are bringing about expanding opportunities for highly trained people. Furthermore, workers in less skilled jobs will lose ground even within some occupational groups where substantial employment gains are expected. In clerical occupations, for example, the jobs eliminated by the introduction of electronic computers and other forms of automation are chiefly of a routine nature, whereas the new positions created by the machines — that of the programmer, for example — generally require considerable training and skill.

Although we can only speculate about the extent to which automation and other technological developments will specifically affect the occupational picture, the broad implications are there for us to see and to act upon. It is becoming more apparent that emphasis in the future will be upon education and skill, and those who are inadequately educated or trained will find themselves increasingly at a disadvantage.

Our young people must be urged to stay in school and encouraged to secure all the education and training possible. Recent studies by the Bureau of Labor Statistics have shown that high school graduates do much better in the job market than the young people who drop out of school before getting their high school diplomas. Furthermore, high school graduates

in general earn more and have a lower unemployment rate than do the drop-outs.

Young workers will need better guidance and counseling in order to prepare for the complex world of work expected during the 1960-70 decade. Dr. James B. Conant, in his study, *The American High School Today,* has recommended that our guidance programs be strengthened.

The Department of Labor has long recognized the important part vocational guidance information can play in the intelligent choice of careers. Through its *Occupational Outlook Handbook* the Department endeavors to provide an up-to-date and careful appraisal of long-run employment prospects in different fields of work.

Our young people are our most precious asset. We must help them prepare for the jobs that fit their talents. Above all, we must recognize that the decade ahead represents both a challenge to the adults who are concerned with youth as well as the young people themselves. Our task is to let our young people know about the job trends that are developing. We must see to it that every young man and woman is given the opportunity for education and training for the jobs expected in the 1960-70 world of work.

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INVESTMENT IN THE FUTURE

By JEROME M. ROSOW

Coordinator of Industrial Relations and Compensation, Standard Oil Company (N.J.)

"Unskilled" is a negative word. Applied to the young worker in our society, it is a symbol of discouragement. In this solar age, man's knowledge is rushing headlong in new directions and creating greater demands for skill and education in the labor force. The under-educated and the under-trained young people who must struggle with the barest preparation are ill equipped to meet the future.

The future for unskilled people is contained within a triangle. This triangle is like a three-sided wall that cannot be scaled. On the one side, the unskilled worker is labelled as vulnerable. On the second side, he is marked as a static force in a very dynamic society. And, on the third side, he is listed as dispensable — among the most expendable of all workers. These three labels are almost stigma. They sound frightening, and they require closer examination.

"Vulnerability" is a big word that means "capable of being wounded." The unskilled worker is not only capable of being wounded, but he is also frequently hurt. What is the deepest and most painful wound a worker can suffer? Certainly the loss of his job is the most severe injury. Time and again, the unemployment figures are populated by unskilled workers.

During the 1958 business decline, one-half of the unemployed were in unskilled or semi-skilled occupations. Almost 2,500,000 workers with limited skill were thrown out of work. They were the first to go and the last to find new jobs. Unemployment doubled and tripled among these groups of our industrial society, when clerical and professional employees were almost fully employed.

The short recessions are mild and simple things against the background of America's great depression of the 1930's. But these recessions are not so mild for the unskilled, who feel every little bump in the business cycle. Once the unskilled lose their jobs, they cannot relocate quickly, and they remain

out of work for long stretches of time. In the last recession, over half of all those unemployed twenty-seven weeks or longer were workers with limited skills. Skill, training, and education are real armor for industrial life today. Without them, the worker is really defenseless and vulnerable.

Major changes in manufacturing techniques produce profound effects upon the structure of skills and occupations. "Automation" is the big word of tomorrow. It simply means more mechanization — machines instead of men. In past decades, machines created more jobs for operatives (for men and women to tend the machines). Recent and future changes mean great gains in production without an equal rate of increase in semi-skilled jobs. From 1910 to the present, the semi-skilled work force increased faster than the labor force. However, in the next twenty years, the semi-skilled occupations will grow at a slower rate than the nation's labor force.

This condition is proved by a few key facts. At the present time, the hundred largest non-financial companies in America have invested about $25,000 per employee. This is almost double the investment of five years earlier. Such tremendous investment rates reflect the major changes in technology, production processes, methods, and organization of work. They signify substitutions of capital for labor. At the same time, professional and technical workers are needed to meet the industrial changes. Engineers, scientists, draftsmen, and technicians are increasing two-and-a-half times as fast as the labor force as a whole. The elite of the machine age is and will be the highly educated experts.

Automation reduces monotony, machine pacing, and the heavy physical demands of jobs. Mass production jobs are safer and more pleasant. The new machine age will not hurt the unskilled worker. But it will force him to move around more to find work and to keep up with technological shifts. It will make him more machine-dependent than ever before. This is what it means to be static: unchanging in the face of a dynamic society.

Why is the unskilled worker dispensable?

1. Companies have a very low investment in training such workers and are quite ready to lose them.

2. The semi-skilled are easily replaced from the general labor force, particularly during periods of some unemployment.

3. These workers are easily and quickly trained for the simple jobs. Many operations permit training on the production line in a few days.

4. The unskilled are very mobile. They change jobs quite often; several times a year is not unusual. In tight labor markets, where workers are scarce, the unskilled are the first to quit. They seek new jobs partly out of boredom and the dead-end nature of their jobs, partly out of the desire for more pay. During layoffs, they are the first hit. Although the unskilled are in motion, the movement is a closed circle: from job to job with little or no advancement. They scurry from one dead-end to the next, searching for a road to progress and advancement. But the road is only open to those with skill, education, and training.

5. Low seniority is a factor in the high mobility. Since the semi-skilled are in motion, they fail to build up the service credits that mean on-the-job seniority, which means job security. Furthermore, many seniority clauses in union contracts have occupational groupings that put the unskilled and semi-skilled workers in competition among themselves. In addition, the higher skilled workers are permitted to claim jobs held by their juniors at lower skill levels when their own work is suspended or abolished. All this means that the low skill, low seniority worker is the first to go.

The prospects for the young worker with limited skill are not black and foreboding; they are gray and quite colorless and will always contain problems. The odds are heavily stacked against those individuals who are most plentiful in an industrial society. Workers who are deprived, or who deprive themselves, of the opportunity to elevate themselves above the lowest levels are helpless to accept the problems faced by the lowest levels.

The unskilled young worker is highly vulnerable to changes of both an economic and a technological nature. The rapid advances in education and research are accelerating the requirements for skill, knowledge, and experience in the American workforce. Workers having these requirements are valuable and competitive in the labor market. The unskilled worker, by contrast, is dispensable because he can be easily and quickly duplicated. This dispensability results in overdependence on employment in a particular industry and even in particular companies. The burdens that confront the un-

skilled workers in our society are most meaningful insofar as these individuals have very limited opportunities. The growing handicap of remaining without any special skill in a society of specialization should impress upon young people the necessity for more education and more training. In the main, a sense of devotion to an investment in themselves for their own future security is the basic issue.

SPECIAL NOTICE

Our readers tell us *The American Child* makes a wonderful gift for friends and relatives interested in young people. Subscriptions are $2.00 a year and may be ordered at any time from the National Committee on Employment of Youth, 419 Park Avenue South, New York 16.

Back issues are much in demand because they are so useful as reference. Some copies of all the following issues are available at fifty cents each:

Disadvantaged Children and the World of Work — about employment problems of migrants and low-income farm children, drop-outs, delinquents, slow learners, and children of minority groups.

Job Placement Programs for Teenagers

Vocational Counseling and the Hard-to-Reach

Youth Work Camps — pros and (rarely mentioned) cons, with article by Senator Hubert Humphrey

Industry Programs for Youth

Problems Before the Golden Anniversary White House Conference on Children and Youth

SOCIAL POLICY AND AUTOMATION

By WALTER P. REUTHER

President, International Union, United Automobile Workers

Nobody in these United States — not our scientists, not our governing officials, not our educators, nor our corporation executives — can do anything but guess where automation and the new technologies will carry our nation and our people. We have groped our way along so far and have already paid an extreme penalty for failure to plan and cooperate, to make our economic policy and our public policy inseparable.

Today's youth steps into this world of question marks, into a mixture of promise and trouble. His hope, imagination, and training can carry him just so far before he runs up against the reality that America has not prepared herself for our fantastic age.

Automation is transforming our whole society, revolutionizing the entire world. It is unrealistic to expect a force of such sweep and consequence to respond to the needs of any one segment of our population alone, when no general policies have been designed to make it serve all.

Young people certainly have special employment problems stemming from their lack of experience and proper educational preparation as well as from the tentative, partial, in-and-out nature of much of their presence in the labor market. Yet they remain dependent on the over-all soundness and direction of the national economy. They cannot long prosper in the midst of economic stagnation or in an environment of lagging economic growth.

Youth is actually the most vulnerable group in a depressed or lagging economy; and young people, therefore, have a special stake in policies and programs making for a high general level of economic activity. They suffer greater net losses in employment during recessions than any other age

group (far out of proportion to their representation in the labor force). Members of minority groups suffer most severely.

Given an inadequate rate of over-all American economic growth (which has been the case during the past seven years), automation aggravates the vulnerability of younger workers. Its immediate effect in the automobile industry, for example, has been to cut manpower needs. The auto industry's productive capacity is increasing faster than its manpower requirements. Industry's claim that new machinery has not meant the layoff of workers can be deceptive. The real loss comes not so much in layoffs as in falling-off in the number of new hires.

What is happening is that an experienced worker whose job is pulled out from under him by new machines will take another job that might otherwise have been filled by a new entrant into the labor force. We can, therefore, say that, in an age of automation, opportunities for youth come primarily from an expansion of our economic system rapid enough to provide jobs for new entrants and older workers displaced by more productive equipment and processes.

Youth's needs and aspirations are most clearly related to the imperatives of the new technology in the area of educational policy. The last few years have brought home to us the uncomfortable, inescapable knowledge that democracy cannot hope to survive by letting things take what is allegedly their natural course. While the educational level of American workers has been increasing steadily, it is not keeping pace with the rising and rapidly shifting demand of our accelerated scientific and technical program. Higher skill levels are also being demanded of white collar workers, craftsmen, and foremen.

Young people must be urged to spend more years in school. However, it is not enough to persuade them to stay out of the labor market until they are better prepared to enter it. We must make the schools more equal to the new tasks imposed upon them.

There is grave doubt that our present educational system is capable of teaching youth the new vocational skills that will be demanded of them. We must seriously consider the need to make vocational training more flexible, so that young entrants into the labor force will be more adaptable to shifting job requirements. We must also consider the need for new

technical training institutes and two-year community colleges supported by public funds as well as greatly improved counseling services both in junior and senior high schools and in the public employment service offices. Special consideration, too, needs to be given to the acute problems of minority youth who, because of their color, face cruel discrimination at the employment office.

Employers and unions both should concentrate on finding ways to increase job opportunities for young workers. Besides full-time jobs, this can include part-time, vacation, and after-school jobs. Apprenticeship programs developed through joint union-management cooperation should be encouraged. While there is a general recognition of the need for increased training, many managements have been slow to inaugurate programs. In 1958, for example, the UAW and the International Association of Machinists urged the setting up of a joint apprenticeship program in the aircraft industry, but the proposal was rejected, despite the fact that seventy per cent of the aircraft companies have no apprenticeship training programs even though they are moving rapidly into the electronics, missile, and space fields.

Our country cannot manage its national affairs wisely and well without an unprecedented expansion of its educational system. Not only do we need more scientists and technicians, but we also have an urgent need for men and women who are equipped by a liberal education to safeguard the human and democratic values of our civilization. Science and technology are invaluable tools for increasing man's control over nature and raising living standards. But they cannot, in and of themselves, furnish the social wisdom and human understanding required to keep men free. We must therefore commit increasing resources and effort to training our youth in the human and social sciences. Economic, scientific, and technical progress are not ends unto themselves. They must be given meaning and purpose by relating them to basic human needs, human development, and fulfillment.

If we look at our current educational system from the standpoint of these larger tasks, we cannot escape the conclusion that we are living educationally from hand to mouth. Present programs and traditional methods of financing are not closing the gap between our educational responsibilities and resources.

We were first shocked into an awareness of this gap in the final years of the last decade by Russian advances in rocketry

and space exploration. The gap must be closed in the decade we have just entered, if young men and women are to be served, both as future workers and as citizens. The weight of evidence suggests that it cannot be closed without an ambitious assist from the federal government to the states and localities.

Assuming that the need for catching up in education will be translated into public policy (a large assumption), we must ask ourselves whether our economy is geared to the effective utilization of the additional skills and talents that will be forthcoming. If it is not, then even the most highly trained workers will continue to incur the risks of underemployment or joblessness.

While we are in a position to discern certain gross trends as technological change proceeds apace, many important shifts in the pattern of economic activity must remain unpredictable if we persist in treating what is essentially a national problem as a random cluster of isolated and local experience. Automation has moved so far so fast that it has already upset certain confident predictions made only a short time ago. It had been assumed, for example, that as a result of the introduction of electronic equipment into offices, the need to program the new machines would open up many new jobs. Since the equipment has been installed, however, a new breed of automated machine has been developed that is capable of doing the "thinking" for the other machines.

We could anticipate many such turns in the road ahead if a central clearing-house were to be established for the processing of data on automation from many sources. My own union, the UAW, has long advocated a permanent commission on technological change that would perform this function. It would study the shifts of industry likely to occur, the need for training and re-training, the job opportunities, and skill requirements that could be expected to follow in the wake of technological change. Such a clearing-house would be an invaluable tool in the hands of the nation as a whole, enabling us to minimize the disruptive impact of automation and to increase what might be termed the social efficiency of scientific and technical progress.

Since young people are tomorrow's citizens, they must begin to come to grips with these broad questions; for more is at stake than the job opportunities of specific groups. The answers we give these questions in the United States may well shape the course of world history. Automation without

wise social policy merely aggravates a fundamental dilemma of industrial society: how to distribute and use the potential abundance inherent in modern technology.

Shall we continue to live in an economy that has been characterized as one of relative private luxury and public squalor, absorbed with the accumulation of creature comforts but blind to fundamental needs in such areas as education, health, housing, civil rights, and leisure? Or shall we inscribe these needs on a list of national priorities and determine to satisfy them, by private action if possible, by public action if necessary?

Only in the latter context of determined growth and fulfillment, it seems to me, can our citizens of tomorrow be justly served and can automation realize its full promise.

FARM YOUTH, TECHNOLOGY, AND LAND POLICY

By ELIZABETH B. HERRING

Executive Secretary, National Council on Agricultural Life and Labor

Farm youth are receiving more attention today than at any time since the landing of the Pilgrims. Economists, sociologists, educators, and statisticians, in Washington and the states, are counting, classifying, and locating them, asking them what they want to do, and testing them to see whether they can do it.

This long overdue concern has come about with the blossoming of a long-time trend into something described as the "technological revolution in agriculture." To farm youth, this means fewer farm jobs than in the past. One farm worker can now feed twenty-three non-farm people. In addition, many farm youth don't know enough to qualify for the better farm jobs that are available, because agriculture has become specialized. Furthermore, most of them don't have the capital to become farm operators, and they know without being told that the hired farm-labor jobs they could get have little to offer besides fresh air.

Social scientists inspecting the status of farm youth would like to find out how they can cope with the present-day facts of life in agriculture since their vocational equipment is the product of the past and may or may not fit them for the present. Social scientists are also interested in working out a logical basis for the education and guidance of farm youth in the future. To determine what agriculture will be like tomorrow, the scientists are using what are known in the trade as "projections."

Some experts are selecting particular agricultural areas to find out what the technological revolution is doing to local farm youth. Obviously the future will not be the same for all groups. By and large, farm youth from the Midwest, a good land region of democratic land tenure, with an educational tradition, have an easier time making occupational transitions than young people from the low-income, marginal

land farm areas of the Appalachians or from the good land areas of the South and Southwest, where a few planters and growers own the resources while the rest of the farm population just exists. With these differences present, it is fortunate that social scientists are looking at the young people in their social and regional context.

The future of how the land is held in the United States will be as important as technology for the occupational future of farm youth. The technological revolution in agriculture is accompanied by a modern version of the ancient power struggle. Control of the land, and especially good land, has been an enthusiasm of the powerful from the dawn of agriculture.

At the present time, the dominant form of land holding in the United States is family farming, a type of private business enterprise controlled by a farm operator and his family with a limited number of hired workers. Family farming is the principal surviving form of private enterprise and is under terrific pressure. Monopoly price-fixing, high interest rates, and other economic mechanisms benefit parts of the nation and injure farmers. Another pressure is the new marketing technology that has accompanied agricultural technology. Since urban business can now operate within nation-wide markets for farm products, a food chain that wants a steady, year-around, low-cost supply of quality products may influence or manipulate conditions of agricultural production in ways designed to serve its own purposes but not necessarily those of the farm population.

This new marketing and distribution technology is the mainspring of a current dream of business agriculture. In its purest form, this dream calls for an agricultural America consisting of a few farms that are highly capitalized, use superlative technology, and dovetail neatly into the food industry and other agriculturally-related businesses. Competition would be reduced to a minimum, and the few people controlling agriculture could come nearer to fixing food and fibre prices than family farmers can at the present time. The dream would turn farm operators into simon-pure businessmen with profits siphoned off into city-centered corporations, while actual farm work would be done by hired farm specialists and wage workers. Thus most of the people on farms would be hired workers, in contrast to the present situation, in which the owning, managing, laboring farmers of American tradition make up three-quarters of the national farm labor force. This dream calls for sending "surplus" youth to the cities.

However, those who believe in widespread distribution of land ownership have another dream. They believe the nation should grapple with the problem of keeping land widely held, as it now is in most areas. Socially advanced parts of the world have done so by gearing policies to maintaining the small farmer in security and efficiency. Such policies keep agricultural profits in the rural community and offer farm youth a real choice between rural and urban occupations.

Farm youth have everything at stake in the decision as to whether America will control its agricultural and distribution technology in behalf of human dignity and welfare. The federal government will have to decide what to do about the holding of agricultural land, about the status of commercial family farm operations, and about low-income farm areas, such as the Appalachians and much of the South. Interest in the latter alone is no substitute for a national agricultural policy that lays down ground rules for the production of the nation's food and fibre. In the long run, the existence or lack of existence of such a policy will be much more important to farm youth of the future than any statistical projections as to how many workers will be needed under probable technological conditions.

VOCATIONAL COUNSELING FOR THE FUTURE

By MARION STEEL

Supervisor, Psychological Services
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A man whose first job was sitting at a riveting machine in an airplane factory fifteen years ago would be surprised to go back and find his old responsibility in the hands of a machine. Machines have taken over many beginning jobs in modern manufacturing companies: those making automobiles, chemicals, radio and TV sets, and producing cigarettes, oils, bottled and canned goods. Machines are also handling beginning white collar jobs in insurance companies, public utilities, and banks.

A goodly number of girls are out of the jobs they would have had with the telephone company since the advent of the dial system. Young workers have also been replaced by automated systems that sort and distribute merchandise in department stores and others that fill orders from inventory and assemble goods for shipment in clothing manufacturing houses.

Ever since the federal government introduced electronic machines in 1951 to deal with voluminous and complex census data, more clerical jobs have been lost to young workers, as public and private organizations have installed or rented electronic data-processing equipment. Billing, record-keeping, filing, addressing, adding, calculating, and bookkeeping are all done by machines in companies with great volumes of paperwork.

Right now, these conditions exist primarily in larger industries. But engineers expect smaller manufacturers to start using machines to compete with larger corporations as soon as electronic devices are manufactured in greater numbers and become less expensive.

Now that machines are steamlining offices and factories, the vocational counselor has to think about the effects of auto-

mation on the work opportunities of the future. He has been trained to see the dangers in trying to forecast the future, but he must continually look ahead. Some of the plans he helps a youngster make will come to fruition only after four or five years (of college or other expensive preparation). If these plans are to be satisfactory, the counselor must continually examine the changing scene in our complicated world and try to see in broad outline the future conditions that will effect the lives of workers. He has to look at present trends, then try to foresee their effect on future employment.

Some of his young clients will not be touched by automation. There is still (and will continue to be) a demand for goods to suit individual tastes. There are jobs that require the personal touch that can't be supplied by machines. There are industries (such as millinery and shoe manufacturing) where standardization is not desirable and changes are constantly being made to suit taste and fashion. There are jobs (such as that of private secretary) that require constant human judgment or that put a premium on personality (such as that of the receptionist). Finally, there are still large fields that are not expected to show many changes beyond those already in effect — the garment industry, construction, agriculture, mining, retailing, and transportation.

However, when the counselor finds young people with mechanical and scientific interests and the potential needed to profit from the necessary training, he will naturally think of the new opportunities being created by automation itself. Although the electronic industry may not use the people displaced by automatic processes, it does need large numbers of workers to design, build, produce, install, run, and service equipment. Employment in the field of electronics is growing rapidly. The companies making automatic equipment now number in the thousands. Their sales rose to three billion in 1954 and are expected to reach ten billion in 1960.

The jobs that are growing up with the development of automation usually require stepped-up education. Persons who can suceed in a scientific or technical education will fit in most easily. Counselors will have no special problems with youngsters who can go to college and get the engineering (electronic, mechanical, and industrial) degrees that will be so prized. College graduates with majors in math, economics, and various sciences may also want to go into such new jobs as that of programmer, the person who breaks down problems into steps suitable for the machines to handle and tells the machine what it is to do.

The counselor may suggest to some able young people the five-year plan for engineering that combines scientific courses with the humanities and arts. Industry wants men with a broader than usual education for top posts in its big corporations. Those using electronic machines might find a combination of engineering and business education ideal.

Youngsters with technical ability who are not college material may be steered into occupations that require less prolonged education. As technicians, they will deal with machines after development and installation. The typical worker in the area of automation is skilled and technically trained. He controls the working of the machines, tends them as they operate, and repairs them when they need it.

However, the vocational counselor is not going to be limited to automated fields. He knows there are important non-technical professions for able people who can manage the required education but have little scientific interest.

Even some of these fields are changing rapidly. Many are demanding broader education. For example, some medical men have to understand radiation, and some writers have to get technical knowledge. There will be a greater need for teachers who can function not only in educational institutions but also within industry itself. Those with backgrounds in mathematics, science, and research will be needed to give specialized instruction and shape education to fit industry's changing needs.

As more college graduates find work in industry and as the population grows, counselors may find themselves referring more and more young people to jobs in recreation. There may be a shorter work week and more leisure time as automatic processes increase. There will be a need for more recreational workers to help Americans learn how to use their new found leisure time.

Although the counselor may have more problems with young people who don't have the intellectual ability for intensive academic education, he is aware that many of them will find places in the service area. The service field will grow in importance as more and more women work for business and industry, leaving many openings for younger, unskilled workers in institutions, restaurants, and homes. The hotel courses offered by some community colleges and the training offered in the food trades are leading the way to the kind of preparation young people will need. There will also be more need for

effective courses in the trades. Vocational schools with courses in citizenship, commercial arts, retailing, plumbing, air conditioning, refrigeration, sheet metal, and garment making will be important.

The counselor cannot look into the future without wondering what the electronic age will do to the worker's morale. He may see reflected the grim picture of a lonely man in a labyrinth of forbidding machines and realize that younger workers in particular may miss the developing influences of a good boss and congenial fellow workers. A roomful of machines can hardly be expected to offer the pleasant work associations possible in many jobs in earlier times, nor the support of other workers in moments of discouragement, nor cheerful banter during coffee breaks.

This is the time for counselors to think seriously about helping young workers develop in a well rounded fashion. Counselors can help those who find themselves in jobs without chances for creativity, challenge, or variety to use their spare time in satisfying avocations and to make adequate lives for themselves.

The vocational counselor is necessarily concerned about the effects of the new technology on individual workers. He cannot help but wonder whether, despite all the efforts to dignify labor, a more clear-cut class system may not yet be emerging, with technicians and professionals making up the new upper work class. Such a structure might well mean that many ambitious youngsters, spurred on by their families, will be trying desperately to reach the top by going through a scientific education for which they are not suited.

Even the clouded view the counselor has of the coming automated world gives him a slight advantage and a greater responsibility. The time is again ripe for reemphasizing some of the most cherished values of our culture: the importance of individual workers, the true importance of jobs the economy needs even though they do not require intensive education, and the true meaning of respect for the individual, regardless of class or function. The vocational counselor has a unique opportunity to affect the future by stimulating other citizens in public and private agencies to take the necessary intelligent steps to prepare our youth adequately to live and work with automation.

THE SCHOOLS AND THE NEW TECHNOLOGY

By HELEN FAUST

Assistant Director Pupil Personnel
School District of Philadelphia

A recent cartoon shows a man feeding the question, "What's new?" into an electronic computer. The answer that emerges nearly smothers him in voluminous coils of tape. This suggestion that automatically controlled machinery is a mysterious, modern Pandora's box that may overwhelm, or save, us has pertinence for the educator.

Automation will certainly create additional pressures on the schools, just as significant social, economic, or technological changes always have. One evidence of its impact is the current demand for a higher level of educational accomplishment. Training up to or beyond the level of high school graduation is required by the occupations expected to experience the greatest percentage increase in the next ten years, according to forecasts by the U. S. Department of Labor. Although more factors are at work in creating this change than just automation, there seems to be agreement that automation will eliminate many unskilled jobs. The demand for brains instead of brawn makes a high school diploma the minimum acceptable for entry jobs in industries using the new automatic equipment. Additional training at the technical or professional level is preferred.

Yet only about three-fifths of the student population remains in school to graduate, even though for many years public schools have offered a varied curriculum aimed at providing an education for every youth up to his own maximum potential. The ratio of graduates has been increasing, but not as fast as modern industry's need for educated manpower. Thus, the forty per cent who appear to lack either the interest or the ability to finish high school represents an urgent and perplexing problem.

This group generally consists of young people with learning difficulties, economic and social handicaps, and emotional disturbances, although they cannot be classified as neatly as this description suggests. For the most part, those who drop out of school or wish to do so have problems that are hard

to solve and for which the nation is still spending only comparatively small sums. Their problems, and the problems they present to the schools, become accentuated when job opportunities for them are even more limited, as they are expected to be in an age of automation.

Only about half the youth who actually graduate from high school and have the qualifications take additional technical or professional training. This may be the result of financial need or a lack of understanding by them or their parents of the importance of further education.

To solve the problem, the schools are now being urged to improve and extend guidance programs. Title V of the National Defense Education Act represents an effort to stimulate the expansion of these services, but it is far from being a strong support. However, there is evidence that schools are going to work on such programs within the limits set by their resources. The knowledge and concern are present; but the resources needed for the assignment of enough personnel and for the use of appropriate techniques have not yet caught up with them. An individualized approach must be used in working with the problems of human motivation.

The age of automation will make it increasingly important for the schools to help young people acquire basic skills, general knowledge, and readiness to learn — rather than mastery of very specialized job skills. Education will have to respond to a demand for greater human flexibility created by the rapidity of change in industrial organization and methods. Changes as marked as those now occurring are certain to involve displacements of personnel (a polite phrase for technological unemployment). But we are promised new kinds of jobs and programs readily available to train displaced workers for occupations in demand.

Some of the changes may require a worker and his family to move to another part of the country, to a foreign country, or to another industry within the same area. Companies may reorganize and have greater opportunities for those able to adapt to new operations. To develop and support the required versatility, schools will certainly need to offer the best possible basic education with a strong emphasis on logical thinking and sound judgment.

Educators will also have to help youth develop the skills for participation in healthful recreation and stimulate their interest in and taste for the arts and humanities. If the school

program is slanted too sharply in the direction of vocational preparation, young people may well find themselves inadequately prepared for the predicted abundance of leisure. Workers are expected to gain a bigger pay check and a shorter working day as a result of the increased machine productivity. The thirty to thirty-two hour work week may soon be with us. Both teachers and counselors will have to help young people prepare for a life with more time for leisure than for work.

Even if automation makes no revolutionary demands on the schools, it will certainly intensify their need to improve and extend instructional and special services. Even now, they lack the resources to carry out an adequate program. They are faced with the same difficulty industry has in finding enough competent personnel and, moreover, have to compete with the scientific and engineering professions, which can offer high salaries and prestige, plus popular and dramatic appeal. It is clear that education must have a vigorous, dynamic, and persistent recruitment program, perhaps in cooperation with health and welfare services. After all, teaching, health, social work, and rehabilitation are as vital to our society as occupations concerned with productivity and defense. This fact needs interpretation at national, state, and local levels.

All the foregoing discussion means that the heightened emphasis on industrial productivity goes beyond the new automatic devices and processes and affects many occupations. Changes in requirements call for a high level of education. Youth from all social, economic, and ability levels have to reach upward.

The schools will have to make some shifts in emphasis and some significant additions of personnel and services to stimulate young people to aspire at appropriate ages for higher level training, to enlist the supporting interest of parents, and to provide for the inevitable extensions in public education. They will need the widest possible public support to convert educational blueprints into actual classrooms, books, equipment, and personnel.

It would not be amiss for us to hope that automated machinery might resemble Pandora's box not only in its capacity for unleashing voluminous coils of human difficulties, but also in concealing at its very bottom the potential that will enable us to provide the kind of education man will need to solve the problems of his complex future.

KEYNOTES

FROM THE NATIONAL COMMITTEE ON EMPLOYMENT OF YOUTH

March, 1960

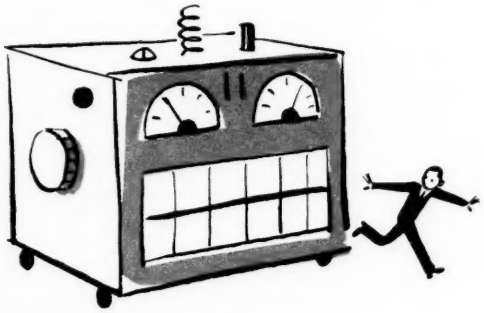
...Youth-employment problems get attention they deserve at Golden Anniversary White House Conference on Children and Youth in Washington, March 27-April 2. NCEY Board members, Mrs. Mildred Fairchild Woodbury, Chairman, Dr. Genevieve Hunter, and Robert C. Taber, will be discussion leaders. Eli E. Cohen, Executive Secretary, will speak at the forum on the young as doers.

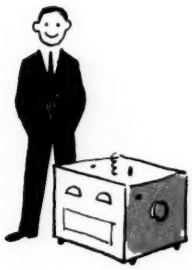
Board member Roy Sorenson is a member of the Conference National Committee, and Dr. Kenneth Clark is preparing a resource paper. Other participants: Mrs. Mildred Jeffrey, Vice Chairman; Lazelle Alway and Curtis Gatlin, Field Service Representatives; Lila Rosenblum, Director of Public Information; and Marcia Freedman, Research Consultant.

...Migrant children continue to be a major program concern. Eli Cohen met with other national leaders in Washington in February to discuss proposed national legislation with Senator Williams, and Curtis Gatlin attended a meeting on state legislation. Mr. Gatlin continued work in New Jersey, organizing county citizen groups to help collect information and extend local schooling to migrant children.

...NCEY makes active friends for youth everywhere. Staff members helped community leaders in Syracuse, Bayonne, Morristown, St. Paul, and several California cities plan practical programs for local youth. The general public responded with great interest to broadcasts based on NCEY materials by more than a thousand radio and tv stations in the past 3 months. Viewers were particularly interested in a Philadelphia career guidance program featuring Mrs. Woodbury and Mr. Taber and an interview with Miss Alway on WOR-TV, New York.

Will automation bring the children you love





a curse... or a blessing?

The answer need not be left to fate. What is done today to help each child get the education, training, and counseling he needs to realize the best in himself will determine to what extent tomorrow's world will be the better world that uses the best in *all* its citizens.

YOU CAN CHANGE THE FUTURE! Help the National Committee on Employment of Youth prepare today's children for tomorrow's world.

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